

## REMARKS

Herein, the "Action", "Office Action", or "Office" refers to the Office Action dated January 26, 2005.

The claims remaining pending here are 1, 4, 17, 21-23, 26, 33, 34, 37-39, and 42. Claims amended are none. Claims canceled, non-elected, or withdrawn are none. There are no new claims.

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### Formal Claim Rejections

#### Claim Rejections under §112

The Office indicates the following:

2. Claim 37 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

3. Regarding claim 37, it is not clear as to how a plurality of first segments or second segments can exist.

Accordingly, Applicant amends claim 37. This amended claim should be definite.

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### Substantive Claim Rejections

#### Claim Rejections under §102 and §103

The Office rejects all pending claims under §102 and/or §103. For the reasons set forth below, the Office has not made out shown anticipation (i.e., §102). Likewise, for the reasons set forth below, the Office has not made out a

1 *prima facie* case of obviousness (i.e., §103). Accordingly, Applicant respectfully  
2 requests that the rejections be withdrawn and the case be passed along to issuance.

3 The Office's rejections are based upon one or more of the following  
4 references (in combination or alone):

- 5 • **Cookson:** *Christopher J. Cookson*, US Patent No. 6,591,365<sup>1</sup>;
- 6 • **Bloom:** *Bloom et al.*, US Patent No. 6,332,194.

### 7 The Application

8 The Application<sup>2</sup> describes an audio watermarking technology for inserting  
9 and detecting strong and weak watermarks in audio signals. The strong watermark  
10 identifies the content producer, providing a signature that is embedded in the audio  
11 signal and cannot be removed. The strong watermark is designed to survive all  
12 typical kinds of processing, including compression, equalization, D/A and A/D  
13 conversion, recording on analog tape, and so forth. It is also designed to survive  
14 malicious attacks that attempt to remove the watermark from the signal, including  
15 changes in time and frequency scales, pitch shifting, and cut/paste editing.

16 The weak watermark identifies the content as an original. With the  
17 exception of D/A and A/D conversion with good fidelity, other kinds of  
18 processing (especially compression) significantly remove the weak watermark. In  
19 this manner, an audio signal can be readily identified as an original or a copy  
20 depending upon the presence or absence of the weak watermark signature.

21 In one described implementation, a watermark encoding system is  
22 implemented at a content provider/producer to encode the audio signal with both a  
23

24 <sup>1</sup> Cookson issued on 7/8/2003, was filed on 1/6/2000; and claims priority to provisional filing on  
25 1/21/1999.

<sup>2</sup> This Application claims priority to a 5/22/1999 filing of a parent patent application.

1 strong and a weak watermark. The watermark encoding system has a converter to  
2 convert an audio signal into frequency and phase components and a mask  
3 processor to determine a hearing threshold for corresponding frequency  
4 components. The watermark encoding system also has a pattern generator to  
5 generate both the strong and weak watermarks, and a watermark insertion unit to  
6 selectively insert either the strong or weak watermark into the audio signal. More  
7 particularly, the watermark insertion unit adds the strong watermark to the audio  
8 signal when the signal exceeds the hearing threshold by a buffer value (e.g., 1-8  
9 dB). If the signal falls below the hearing threshold by more than the buffer value,  
10 the watermark insertion unit adds the weak watermark component to the audio  
11 signal. When the signal falls within the buffer area about the hearing threshold,  
12 the insertion unit takes no action because the signal component is not significantly  
13 above or below the threshold to be watermarked.

14 A watermark detecting system is implemented at a client that plays the  
15 audio clip. Like the encoding system, the watermark detecting system has the  
16 converter, the mask processor, and the watermark pattern generator. It is also  
17 equipped with a watermark detector that locates any strong and weak watermarks  
18 in the audio clip. The watermark detector determines which block interval of the  
19 watermarked audio signal contains the watermark pattern and if the strong or weak  
20 watermark generated by a particular set of keys is present in that block interval of  
21 the signal.  
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**Cookson**

**Cookson** is the primary reference upon which anticipation rejections are based. It describes a copy-protection control system technology for protecting against use of pirated music.

With this technology, two watermarks are inserted into the music to be protected by the music publisher. One watermark is robust--it will not be destroyed by compression. The other watermark is weak--it is designed to be destroyed by compression. The robust mark tells a player that the music is protected, i.e., that it is not authorized to be delivered in compressed form over an insecure channel. If the music is found to have been compressed and it was delivered over an insecure channel, then its play or other processing can be restricted.

**Bloom**

**Bloom** is the secondary reference upon which obviousness rejections are based. It describes a method for data preparation and watermark insertion. The method includes the step of preparing the data at a first time by manipulating at least one set of the data characteristics for subsequent insertion of a first watermark.

The method further includes the step of inserting the first watermark by manipulating the set of data characteristics at a second time subsequent to the first time. In another embodiment of the method of the present invention, the method further includes the step of inserting a second watermark at a third time, before, during, or after the first time, by manipulating at least one set of the data characteristics. In a variation of the present invention a method for inserting a

1 watermark into compressed data is provided. The compressed data has sets of data  
2 characteristics. The method includes the steps of inserting a watermark by  
3 manipulating the set of data characteristics; and optimizing the manipulated data  
4 by modifying the compressed data characteristics subject to a set of constraints.

## 5 6 Anticipation Rejections

### 7 §102 Rejections based upon Cookson

8 The Office rejects claims 1, 4, 17, 21-23, 26, 33, 34, 37, and 42 under 35  
9 USC §102(e) as being clearly anticipated by Cookson.

#### 10 11 Claim 1

12 Regarding this claim, the Office indicates the following:

#### 13 14 6. Regarding claim 1, see Cookson

15 *An audio watermarking system comprising:*

16 *a pattern generator configured to generate both a strong watermark and a weak watermark; (Col. 4, lines 3-7) and*

17 *a watermark insertion unit configured to selectively insert either the strong watermark or the weak watermark into segments of the audio signal, so that resulting segments have either the strong or the weak watermark inserted therein, but not both. (Col. 4, lines 37-43 and lines 64-66).*

18 Cookson teaches a copy protection system, which can detect a weak and a strong  
19 watermark in an audio file. It is inherent that a system has inserted either a weak or  
20 strong watermark, but not both according to Cookson's teachings.

21 The Office indicates that inherent in Cookson's copy-protection system  
22 (which is designed to detect watermarks) is that "either a weak or strong  
23 watermark" has been inserted, "but not both." Applicant disagrees.  
24  
25

1 On col. 2, lines 62-64, Cookson states (with emphasis added): "In  
2 accordance with the principles of my invention, in one embodiment thereof, two  
3 watermarks or tags are inserted into the music by the music publisher."  
4 Applicant submits that the Cookson statement that two watermarks are inserted is  
5 synonymous to stating that both marks are inserted. This is directly contrary to the  
6 claim recitation that "either a weak or strong watermark" is inserted, "but not  
7 both."

8 Furthermore, Applicant respectfully submits that the purpose and  
9 functionality of Cookson relies on the insertion of both marks into a "file" (e.g.,  
10 digital music):

11 One watermark is robust. By this is meant that it will not be destroyed by  
12 compression. (Hereinafter, the term "compression" excludes compression that is  
13 lossless; as used hereinafter, "compression" results in some information loss.) The  
14 other watermark is weak—it is designed to be destroyed by compression. The robust  
15 mark tells the player that the music is protected ("this music is not authorized to be  
16 delivered in compressed form over an insecure channel"), i.e., if the music is found  
17 to have been compressed and it was delivered over an insecure channel, then it  
18 should not be played or otherwise processed. [Cookson, col. 2, line 64 through col.  
19 3, line 7]

20 With Cookson, the detection of a robust watermark indicates that the  
21 publisher of the file intended for the file's content to be protected (e.g., restricting  
22 copying and playing of the file).<sup>1</sup> However, for Cookson to fully protect the file,  
23 it must determine that the file—with a detected robust watermark—was  
24 compressed at one time. If it was compressed at one time, then Cookson  
25 necessarily presumes a weak watermark previously was inserted. This

<sup>1</sup> See col. 3, lines 46-47: "The presence of the robust watermark is an indication that it was the publisher's intent that the music not be copied."

1 presumption is so strong that Cookson file should be fully protected when it  
2 detects a robust watermark, but fails to detect a weak watermark.<sup>1</sup>

3 Applicant submits that Cookson does not disclose all of the features and  
4 elements of this claim. Accordingly, Applicant asks the Office to withdraw its  
5 rejection of this claim.

6  
7 Claim 4

8 This claim ultimately depends upon independent claim 1. As discussed  
9 above, claim 1 is allowable.

10 In addition to its own merits, this dependent claim is allowable for the same  
11 reasons that its base claim is allowable. Applicant submits that the Office  
12 withdraw the rejection of this dependent claims because its base claim is  
13 allowable.  
14

15 Claim 17

16 This claim recites:

- 17 • a pattern generator configured to generate both a strong  
18 watermark and a weak watermark; and
- 19 • a watermark detector configured to divide a watermarked audio  
20 signal into multiple portions and detect whether a single  
21 watermark is present in each portion, and, if a watermark is  
22 detected in a portion, further configured to determine whether that  
23

24  
25 <sup>1</sup> See col. 3, lines 33-35 and col. 4, lines 4-7

1 single watermark detected in that portion is either a strong or a  
2 weak watermark.

3  
4 Although the language of this claim differs from that of claim 1, the Office  
5 relies on its arguments for the rejection of claim 1 for the rejection of this claim.  
6 In as much as the Office's reliance on the preceding argument for claim 1 is valid  
7 for this claim (considering the differences in language between claims 1 and 17),  
8 then Applicant submits that this claim is allowable for the same reasons provided  
9 above in response to the Office's rejection of claim 1.

10 Furthermore, Applicant respectfully submits that the Office has not shown  
11 that Cookson discloses a division of "a watermarked audio signal into multiple  
12 portions," which is recited in this claim. Moreover, the Office has not shown that  
13 Cookson discloses a detection of "whether a single watermark is present in each  
14 portion," which is also recited in the claim.

15 Applicant submits that Cookson does not disclose all of the features and  
16 element of this claim. Accordingly, Applicant asks the Office to withdraw its  
17 rejection of this claim.

18 Claim 21

19  
20 This claim ultimately depends upon independent claim 17. As discussed  
21 above, claim 17 is allowable.

22 In addition to its own merits, this dependent claim is allowable for the same  
23 reasons that its base claim is allowable. Applicant submits that the Office  
24 withdraw the rejection of this dependent claims because its base claim is  
25 allowable.



Claim 22

Although the language of this claim differs from that of claim 1, the Office relies on its arguments for the rejection of claim 1 for the rejection of this claim. Assuming the Office's reliance on the preceding argument for claim 1 is valid for this claim, Applicant submits that this claim is allowable for the same reasons provided above in response to the Office's rejection of claim 1.

Applicant submits that Cookson does not disclose all of the features and element of this claim. Accordingly, Applicant asks the Office to withdraw its rejection of this claim.

Claim 23

This claim ultimately depends upon independent claim 22. As discussed above, claim 22 is allowable.

In addition to its own merits, this dependent claim is allowable for the same reasons that its base claim is allowable. Applicant submits that the Office withdraw the rejection of this dependent claims because its base claim is allowable.

Claims 26 and 34

Although the language of this claim differs from that of claim 1, the Office relies on its arguments for the rejection of claim 1 for the rejection of this claim. Assuming the Office's reliance on the preceding argument for claim 1 is valid for this claim, Applicant submits that this claim is allowable for the same reasons provided above in response to the Office's rejection of claim 1.

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Applicant submits that **Cookson** does not disclose all of the features and element of this claim. Accordingly, Applicant asks the Office to withdraw its rejection of this claim.

### Claim 33

Although the language of this claim differs from that of claim 1, the Office relies on its arguments for the rejection of claim 1 for the rejection of this claim. Assuming the Office's reliance on the preceding argument for claim 1 is valid for this claim, Applicant submits that this claim is allowable for the same reasons provided above in response to the Office's rejection of claim 1.

Applicant submits that **Cookson** does not disclose all of the features and element of this claim. Accordingly, Applicant asks the Office to withdraw its rejection of this claim.

### Claim 37

Although the language of this claim differs from that of claim 1, the Office relies on its arguments for the rejection of claim 1 for the rejection of this claim. Assuming the Office's reliance on the preceding argument for claim 1 is valid for this claim, Applicant submits that this claim is allowable for the same reasons provided above in response to the Office's rejection of claim 1.

Applicant submits that **Cookson** does not disclose all of the features and element of this claim. Accordingly, Applicant asks the Office to withdraw its rejection of this claim.

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1        Claim 42

2        Although the language of this claim differs from that of claim 1, the Office  
3        relies on its arguments for the rejection of claim 1 for the rejection of this claim.  
4        Assuming the Office's reliance on the preceding argument for claim 1 is valid for  
5        this claim, Applicant submits that this claim is allowable for the same reasons  
6        provided above in response to the Office's rejection of claim 1.

7        Applicant submits that **Cookson** does not disclose all of the features and  
8        element of this claim. Accordingly, Applicant asks the Office to withdraw its  
9        rejection of this claim.

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11                    **Obviousness Rejections**

13                    **The Office Has Not Made Out a Case of Prima Facie Obviousness**

14        Applicant disagrees with the Office's obviousness rejections and  
15        respectfully submits that the Office has not made out a *prima facie* case of  
16        obviousness. Accordingly, Applicant respectfully requests withdrawal of these  
17        rejections.

19                    **§103 Rejections based upon Cookson and Bloom**

20        The Office rejects claims 38 and 39 under 35 USC §103(a) as being  
21        unpatentable over **Cookson** in view of **Bloom**.

Regarding these claims, the Office indicates:

19. Regarding claim 38, the further limitation of claim 37, see Bloom

*... wherein the watermark insertion unit selectively chooses segments for insertion of the watermarks according to an audible measure of the segments.* (Col. 3, lines 14-21, and Col. 5, lines 53-61).

Bloom teaches a method for watermark insertion. Bloom teaches the insertion of two different watermarks, however Bloom does not teach the structure of a weak and a strong watermark. Cookson teaches a watermark detection system, which detects the presence of a weak and/or strong watermark. Cookson does not teach that an audible measure is used for inserting a watermark. It would have been obvious for one of ordinary skill in the art to combine the teachings of Bloom with those of Cookson for the purpose of retaining the perceived quality of the audio source.

20. Regarding claim 39, the further limitation of claim 37, see the preceding argument with respect to claim 38. The combination of Cookson and Bloom teach this feature.

Applicant respectfully disagrees with the Office's assertion that it would be obvious for one of ordinary skill in the art (OOSA) to combine the teachings of Bloom with those of Cookson for the purpose of retaining the perceived quality of the audio source.

The Office has not provided objective evidence that discloses "selectively choos[ing] segments for insertion of the watermarks according to an audible measure of the segments." Applicant respectfully submits that in the absence of objective evidence, the Office concludes that it would have been obvious for OOSA to combine the teaching of the two references for the purpose of "retaining the perceived quality of the audio source."

While the purpose provided by the Office may be a reasonable generalized motivating factor, it is not suffice. The Office still has not shown objective

1 evidence where the references specifically disclose selective watermark insertion  
2 in accordance with "an audible measure" of segments of the audio signal.  
3 Applicant submits that this feature is an explicitly recited part of these claims and  
4 cannot be reasoned away by a conclusion that uses a generalized motivation factor  
5 for combining other elements and features disclosed by the cited references.

6 Applicant submits that the Office has not shown that that the combination  
7 of the cited references discloses all of the elements and features of these claims.  
8 Furthermore, claims 38 and 39 depend upon claim 37 and, as indicated above,  
9 claim 37 is allowable. Therefore, in addition to their own merits, claims 38 and 39  
10 are allowable because their base claim is allowable.  
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1 **Dependent Claims**

2 In addition to its own merits, each dependent claim is allowable for the  
3 same reasons that its base claim is allowable. Applicant submits that the Office  
4 withdraw the rejection of each dependent claim where its base claim is allowable.  
5

6 **Conclusion**

7 All pending claims are in condition for allowance. Applicant respectfully  
8 requests reconsideration and prompt issuance of the application. If any issues  
9 remain that prevent issuance of this application, the Office is urged to contact the  
10 undersigned attorney before issuing a subsequent Action.  
11

12 Respectfully Submitted,

13  
14 Dated: 4-26-05

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